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CARE OF ORCHARDS.

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CARE OF ORCHARDS.

W. M. Munson.

The fact that the apple is spontaneous in many parts of the State, and that orchards will exist and bear a partial crop of fruit though utterly neglected, is responsible for much of the ill-treatment seen on every hand. There is little doubt, however, that a well managed orchard is a most valuable farm property, and one of the surest sources of income. In view of the large number of orchards needing care, throughout the State, attention will, at this time, be given to this point rather than to planting.

RENOVATION.

Repair is not necessarily associated with old age and decay. Apple trees ten or fifteen years old sometimes need repairing quite as much as do old and neglected ones. When the orchard to be treated has been neglected for many years, the first operation, if the land does not need draining, is to prune thoroughly. In this operation, which may be performed at any time from late fall till the middle of May, care should be used that the trees are given an open head. This does not imply that all small side limbs should be removed, leaving a lot of whipstocks, but that such of the larger limbs as are parallel and close together, or those which cross, should be cut out. Half of the difficulty of pruning is done away if one decides to allow the tree its natural form, rather than to attempt to shape it to some particular model.

Many growers suppose that pruning weakens the tree and shortens its life. There is, however, no reason for this belief, other than the general statement that "pruning is unnatural." But pruning is not unnatural. Man seldom prunes so heavily as does nature in removing superfluous limbs in the growth of young saplings in the forest. Furthermore, nature prunes at

all seasons and in the rudest ways. By this it should not be understood, however, that care is not necessary in the mechanical operation of pruning. On the other hand, it is of the greatest importance that large limbs be removed with care and the wounds painted to prevent the entrance of fungi which will induce decay.

Trees are sometimes broken by heavy loads of fruit or by ice. In such matters, prevention is better than cure, and in training young trees, all crotches should be avoided. If bad crotches should be found to exist in trees ten or more years old, they should be braced by means of an iron bolt. Much damage may be avoided if bolts are used in season.

If the land on which the orchard is located has never been plowed, the surest way of stirring the soil and working in the necessary fertilizer is to fence off a portion of the area to be renovated, and turn in several hogs. The hogs, in rooting for grubs, will stir the soil as completely as would be possible with plow and harrow. The value of this treatment has been fully demonstrated at the farm of Charles S. Pope, Manchester, where most of the orchard work of this Station has been conducted. An orchard some fifty years old, which had not been plowed for more than twenty years, was treated as above noted, ten hogs being placed in the enclosure of about one and one-half acres in extent. The trees in this enclosure assumed a brighter, richer color which was noticeable from the street, half a mile distant. No accurate account of the yield of the trees in this plot as compared with others was kept, but Mr. Pope reports that there was a decided difference both in yield and in quality of the fruit. So satisfactory were the results that each year since the first trial a new area is set apart for similar treatment.

Not infrequently, during winters when the snow remains long on the ground, apple trees will be girdled by mice and rabbits. In such a case, "bridge grafting" is often practiced with satisfactory results; *i. e.* cions are set at frequent intervals about the trunk of the tree, one end being inserted underneath the bark above the wound, the other below. In this way the circulation of sap is maintained and the tree may be saved. The wound should be covered with grafting wax or with fresh cow dung, to exclude the air.

GRAFTING.

In starting a new orchard it is usually advisable to set trees which have been grafted in the nursery, rather than to set chance seedlings with the expectation of top-grafting them. Some varieties, as the Baldwin, do better when "top-worked," but even for such, nursery grown stock of Ben Davis, Northern Spy, Pewaukee or some other hardy, vigorous sort will give more uniform and satisfactory results than will seedlings.

While, in general, it is well to avoid top-grafting, there are few orchards in which some such work is not necessary, and many worthless seedlings, along the roadside and in the pastures, may be converted into valuable sources of income. The most successful grafting is that which disturbs the tree least. The first rule to observe, in grafting large trees is: "Graft many and small limbs." Before commencing to graft, decide carefully at what distance from the body, or from the center of the top, the main limbs should be cut to insure a good top. If a spread of six feet or ten feet from the center is decided upon, graft all of the main branches at that distance. In other words, one must plan for the future top of the tree; simply making the cions grow, being but a part of the operation. If the tree has been properly pruned, most of the more conspicuous branches should be grafted, and to avoid long pole-like limbs some cions should be set on the side branches of all the larger limbs. The practice of grafting a few large stubs low down, is not to be commended; the shock of removing a large portion of the top at one time is a serious one, and there is often injury from sunscald. A good grafter will leave enough small brush in the center of the tree to screen the trunk and larger branches.

Old neglected trees which are to be worked over, may with profit be given a preparatory pruning a year or two before grafting. Unnecessary limbs can be cut out better before grafting than afterwards. The ungrafted limbs must be gradually removed; the removal being made annually to about the extent of the growth of the cions, or a little more.

FERTILIZING.

The profit in fruit growing lies in securing an extra large amount of fruit of superior quality. This end can only be attained by the addition of a supply of plant-food in excess of that demanded for the growth of the trees. How much plant-food should be added is simply a matter of business that must be settled by each individual for his own farm. The actual fertility of the soil depends upon the plant as well as upon the amount and kind of plant-food in the soil; for only when the plant is in a healthy, vigorous condition can the maximum

amount of food be appropriated. In most cases, as much depends upon the physical condition of the soil, as upon its chemical constitution.

In general, a liberal application of ground bone or phosphatic rock and of hardwood ashes will be found the most satisfactory fertilizing material for orchards. Stable manure may also be used with good effect, on soils deficient in organic matter; though for most orchards potash and phosphoric acid are desired, rather than nitrogen.

CULTURE.

Many good orchards are so located that cultivation is out of the question. There is no doubt, however, that where possible,

thorough culture, especially while the orchard is young, is much to be desired. By cultivation, the soil is rendered in better condition for the feeding roots, the plant food is thus rendered more available, and the moisture is better conserved than in any other way. During the first years after planting, hoed crops may be grown between the trees, provided sufficient fertilizers are used. In no case, however, should a grain crop be grown, except as a cover crop to be plowed under in the spring. The accompanying illustrations clearly represent the value of culture. The cut on the opposite page represents an orchard of Fameuse,

Northern Spy and Milding planted, as two-year-old trees, in 1892. The above illustration shows an orchard of similar varieties planted the next year. The first has been given thorough culture and was severely pruned in 1897; the other, separated from the first only by a fence, has been left without treatment, and a crop of hay has been taken off each year. Further remark is unnecessary.

SPRAYING.

Spraying is an easy and practical way of applying insecticides and fungicides. Insecticides act in two ways: (1) By poisoning the insects, when eaten; (2) by closing the breathing pores

of the insects, or acting as an external irritant. Paris green is an example of the first class; kerosene emulsion or pyrethrum of the second. Hellebore, if applied in the dry form, acts in both ways. By spraying the trees with Paris green, some particles of the poison will be lodged upon the young fruit or upon the leaves; then as the insects attempt to enter the fruit, or to eat the foliage, they are destroyed.

Fungicides are of importance solely as preventives. The coating of Bordeaux mixture, or other material, upon the fruit and leaves, kills the germinating spores of the fungi before they penetrate the plant tissue. The time of spraying will naturally vary, depending on the purpose in view and the material used. The subject has been discussed in Bulletin 29.

ORCHARD WORK NOW IN PROGRESS AT THE EXPERIMENT STATION.

The principal orchard work now in progress at the Experiment Station is along the lines of tillage and fertilizers. At the farm of Charles S. Pope, Manchester, a young orchard, set on land which has never been plowed, has been laid off in plats, part of which are treated with concentrated fertilizers, and part with stable manure. Half of the orchard has been placed under cultivation, and the other half is heavily mulched.

Another orchard, on the same farm, has been divided into plats for treatment with different salts of potash, with a view to studying the effect, if any, upon quality of fruit and susceptibility to attack of apple scab.

In Aroostook County, as noted in previous reports, some of the more promising Russian varieties of apples, plums, and cherries are under trial; also some of the hardier American sorts. Such of these as have fruited were discussed in the Annual Report of this Station for 1896.

At present there are growing in the Station nurseries several hundred of the hardier standard apples which will next year be sent to different parts of the State, where encouragement to the fruit growing industry seems necessary. These varieties include Arctic, Shiawassee Beauty, Sutton Beauty, Westfield, etc.